IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/798,508	**Conf. No.:**	6406
Applicant:	Farrett	**TC/AU:**	2169
Filed:	03/31/2004	**Examiner:**	Raab, Christopher J.
		Docket:	CHA920030027US1

Title: SEARCH ENGINE PROVIDING MATCH
AND ALTERNATIVE ANSWERS USING
CUMULATIVE PROBABILITY VALUES   (as amended)

Mail Stop Appeal Brief – Patents
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BRIEF OF APPELLANT

This is an appeal from the Final Office Action dated October 31, 2006 rejecting claims 1-15, and the Advisory Action dated February 28, 2007 confirming the same rejection. This Brief is accompanied by the requisite fee set forth in 37 C.F.R. 1.17 (c).

REAL PARTY IN INTEREST

International Business Machines Corporation is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

As filed, this case included claims 1-15. Claims 1-15 remain pending, stand rejected, and

form the basis of this appeal.

STATUS OF AMENDMENTS

A Final Office Action was issued by the Office, dated October 31, 2006, in response to an Amendment that was filed on September 27, 2006 by Appellant. An After Final Amendment was submitted on January 3, 2007, in response to the Final Office Action. Pursuant an Advisory Action, dated February 28, 2007, said submitted After Final Amendment was entered for purposes of appeal.

SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides a search system, method, and program product for searching a knowledge base for a match answer and an alternative answer. The method includes the steps of: inputting a search term; beginning a search at a random location in the knowledge base to identify the match answer; determining a match answer category from the match answer; determining a look-up association based on the match answer category and a search history; plugging the look-up association into an alternative answer probability table to identify an alternative answer category; and performing a secondary search at a second random location in the knowledge base to find the alternative answer that belongs to the alternative answer category.

Claim 1 claims a computerized method (see in general, ¶¶ [0018],[0026]) for searching a knowledge base database (see in general, Fig. 2; item 36) having a plurality of answer objects for a match answer and an alternative answer and providing the match answer and alternative answer, comprising: inputting a search term (item 20; see e.g., ¶ [0021]); beginning a search at a random location (item 42) in the knowledge base (item 36) to identify the match answer (item

14; see e.g., ¶ [0022]); outputting the match answer (item 14; see e.g., ¶ [0022]); determining a match answer category (item 13) from the match answer (item 14; see e.g., ¶ [0028]); determining a look-up association (item 17) based on the match answer category (item 13) and a search history table (see in general, Fig. 3; item 34; see e.g., ¶¶ [0023],[0025]); inputting the look-up association (item 17) into an alternative answer probability table (see in general, Fig. 4; item 30) to identify an alternative answer category (item 15; see e.g., ¶ [0024]); performing a secondary search at a second random location (item 44) in the knowledge base (item 36) to find the alternative answer (item 16) that only belongs to the alternative answer category (item 15; see e.g., ¶ [0022]); and outputting the alternative answer (item 16; see e.g., ¶¶ [0022],[0025]).

Claim 6 claims a user preference search system (see in general, Fig. 1; item 10) for searching a knowledge base (see in general, Fig. 2; item 36) to find a match answer (item 14) and an alternative answer (item 16) for a search term (item 20), comprising: a search engine (see in general, Fig. 1, item 22) that performs (see e.g., ¶ [0022]) a first search (item 24) at a first location in the knowledge base (item 36) and returns a match answer (item 14), and performs (see e.g., ¶ [0022]) a second search (item 25) at a second location in the knowledge base (item 36) to find an alternative answer (item 16), wherein the alternative answer (item 16) belongs to an alternative answer category (item 15) determined by inputting (see e.g., ¶¶ [0023]-[0025]) a look-up association (item 17) into an alternative answer probability table (see in general, Fig. 4; item 30), wherein the look-up association (item 17) is based on a search history table (see in general, Fig. 3; item 34); and a table update system (see in general, Fig. 1; item 32) that updates (see e.g., ¶¶ [0028][0029]) the alternative answer probability table (see in general, Fig. 4; item 30) based on a table (item 34) of previously determined category answer associations (item 27).

Claim 11 claims a program product stored on a recordable medium (see in general, ¶¶

[0018],[0030]) for searching a knowledge base database (see in general, Fig. 2; item 36) for and providing a match answer (item 14) and an alternative answer (item 16), comprising: means for inputting a search term (see e.g., ¶ [0021]; item 20); means for beginning (see e.g., ¶ [0022]) a search at a random location (item 42) in the knowledge base (see e.g., Fig. 2; item 36) to identify the match answer (item 14); means for outputting (see e.g., ¶ [0022]) the match answer (item 14); means for selecting (see e.g., ¶ [0028]) a match answer category (item 13) from the match answer (item 14); means for determining (see e.g., ¶¶ [0023],[0025]) a look-up association (item 17) based on the match answer category (item 13) and a search history table (see in general, Fig. 3; item 34); means for inputting (see e.g., ¶ [0024]) the look-up association (item 17) into an alternative answer probability table (see in general, Fig. 4; item 30) to identify an alternative answer category (item 15); means for performing (see e.g., ¶ [0022]) a secondary search at a second random location (item 44) in the knowledge base (item 36) to find the alternative answer (item 16) that only belongs to the alternative answer category (item 15); and means for outputting (see e.g., ¶ [0022],[0025]) the alternative answer (item 16).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-3, 6-9 and 11-13 are unpatentable under 35 U.S.C. 102(b) over Bowman et al. (U.S. Patent No. 6,006,225), hereinafter "Bowman".

2. Whether claims 4-5, 10 and 14-15 are unpatentable under 35 U.S.C. 103(a) over Bowman in view of Pak et al. (U.S. Patent Application Publication No. 2004/0260534 A1), hereinafter "Pak".

<center>**ARGUMENT**</center>

**1. REJECTION OF CLAIMS 1-3, 6-9 and 11-13 UNDER 35 U.S.C. §102(b) OVER
BOWMAN**

Appellant respectfully submits that the rejection of claims 1-3, 6-9 and 11-13 under 35

U.S.C. 102(b) over Bowman is defective. "A claim is anticipated only if each and every element

as set forth in the claim is found, either expressly or inherently described, in a single prior art

reference." <u>Verdegaal Bros. v. Union Oil Co. of California</u>, 814 F.2d 628, 631, 2 U.S.P.Q.2d

1053 (Fed. Cir. 1987); see MPEP §2131, p. 2100-69. Because each and every element of

claims 1-3, 6-9 and 11-13 is not found in Bowman, Appellant respectfully requests removal of

the rejection under 35 U.S.C. 102(b) and an issuance of a notice of allowance.

As argued in the January 3, 2007 After-Final Amendment, at least one feature of the

claimed invention is not taught by the reference. For example, with respect to independent claim

1, Appellant respectfully submits that the cited reference fails to teach, *inter alia*, inputting the

look-up association into an **alternative answer** probability table to identify an **alternative**

answer category, wherein the look-up association is determined based on the match answer

category and a search history table. Emphasis added. See claim 1 and similar language in

independent claims 6 and 11.

In rejecting claim 1, the Office alleges that Bowman discloses an inputting of the look-up

association *et al.* as follows:

> "[T]he generation process then maps each query term found in a query and its
> prefix to other terms used with that particular query. A correlation score is
> maintained for each related term in the mapping, and is stored in a table (read as
> determining a look-up association based on the match answer category and a
> search history table, inputting the look-up association into an alternative answer
> probability table to identify an alternative answer category) (column 10 lines 25-
> 33, figures 5A, 5B)"

Final Office Action, page 4, item 07. It appears that the Office is alleging that the sample mappings of both before and after a query, figures 5A and 5B, respectively in Bowman, are a teaching of an alternative answer probability table. Appellant respectfully does not agree that the citation aligns with the allegation. Clearly, there is no, *inter alia*, inputting of a look-up association into the mappings in figures 5A/5B in Bowman.

A careful reading of the cited sections (i.e., column 10, lines 25-33), figures 5A and 5B, and Bowman in its entirety, indicates that Bowman is completely devoid of any teaching or suggestion of any kind of an inputting of a determined look-up association into any type of a probability table, be it an alterative answer probability table or any kind of a probability table, as in the claimed invention. In fact, the salient portion of the specification in Bowman (i.e., col. 10, lines 25-33) merely discloses the maintenance of a "correlation score" for each related term in the mapping based on the number of times the related term occurred in combination with the key term. This is not a clear teaching of an alternate answer probability table.

Further, it is not clear to Appellant which items in the mapping shown in figures 5A and 5B allegedly disclose specifically, for example, a match answer; a match answer category; a look-up association; a search history table; an alternative answer probability table; an alternative answer category; and/or an alternative answer. In sum, the Office's allegation and citation cannot amount to meeting the requisite standard of showing a clear teaching of the aforementioned features.

Additionally, with respect to claim 1, Appellant respectfully submits that the cited reference also fails to teach, *inter alia*, performing a secondary search at a second random location in the knowledge base to find the alternative answer that **only** belongs to the alternative answer category, wherein the alternative answer category is identified via the inputting of the

look-up association into an alternative answer probability table. Emphasis added. See claim 1 and similar language in independent claims 6 and 11.

In rejecting claim 1, the Office alleges that Bowman discloses these limitations as follows:

> "[A]nd that successive searches are preformed on the modified query (read as performing a secondary search at a second random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category) (column 13 lines 63 – 65, column 14 lines 1 – 12, Figure 5B, 9)."

Final Office Action, page 5, item 07. A careful reading of the cited sections and figures of Bowman does not show any teaching of the alleged limitations including any identifying of an alternative answer category via inputting, etc., and performing a secondary search to find the alternative answer that only belong to the alternative answer category. In fact, the cited section of Bowman (i.e., column 13, lines 63-65 and column 14, lines 1-12) merely discloses combining an original query term(s) with a respective related term. Bowman uses the example of entering the term "ROUGH" and three additional terms/hyperlinks of "ROUGH-GUIDE", "ROUGH-LONDON", and ROUGH-TERRAIN", are formed. Appellant respectfully submits that, similarly to the deficiency in the above limitation, it is not clear from the citation made by the Office what specifically in Bowman is a clear teaching of, for example, a secondary search; a second random location; an alternative answer; an alternative answer category; an alternative answer probability table; a look-up association; and/or an alternative answer that *only* belong to the alternative answer category. The Office's allegation and citation cannot amount to meeting the requisite standard of showing a clear teaching of the aforementioned features.

Additionally, in the Advisory Action of February 28, 2007, the Office again does not specifically point out what particular aspects in Bowman teach the features in the claims. Instead

the Office states that "Bowman teaches modifying a query by using correlation data that is based on historical query submission." Advisory Action, Continuation Sheet. This is not an adequate showing of a clear teaching of the aforementioned limitations.

Thus, Bowman does not teach all of the features found in claim 1. Accordingly, Appellant respectfully requests withdrawal of the rejection with respect to claim 1.

Independent claims 6 and 11 were rejected under the same rationale as claim 1. As a result, Appellant herein incorporates the arguments listed above with respect to claim 1.

With respect to dependent claims 2-3, 7-9 and 12-13 Appellant herein incorporates the arguments presented above with respect to the independent claims from which the claims depend. The dependent claims are believed to be allowable based on the above arguments, as well as for their own additional features. Accordingly, Appellant respectfully submits that without references that support the Office's allegation, the rejection is improper.

2. REJECTION OF CLAIMS 4-5, 10 and 14-15 UNDER 35 U.S.C. §103(a) OVER BOWMAN IN VIEW OF PAK

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Appellant respectfully submits that the Bowman and Pak references, taken alone or in combination, at the least, fail to meet the third criterion to establish a *prima facie* case of obviousness. That is, as discussed above, Bowman does not teach or suggest all the claim

limitations of independent claims 1, 6, and 11. Regarding dependent claims 4-5, 10 and 14-15 which depend from the aforementioned independent claims, Pak does not remedy the deficiencies of Bowman. As such, the rejection under 35 U.S.C. §103(a) is defective.

Accordingly, for these reasons, Appellant submits that the present invention is not anticipated by Bowman, Pak, individually or in combination, and that the application is in condition for allowance. With respect to features in the dependent claims not specifically referenced herein, the dependent claims are believed to be allowable based on the above arguments, as well as for their own additional features.

CONCLUSION

In summary, Appellants submit that claims 1-15 are allowable because the claimed invention is not anticipated by the cited references, Bowman, Pak, or Bowman and Pak in combination.

Respectfully submitted,

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CLAIMS APPENDIX

1.　　A computerized method for searching a knowledge base database having a plurality of answer objects for a match answer and an alternative answer and providing the match answer and alternative answer, comprising:

inputting a search term;

beginning a search at a random location in the knowledge base to identify the match answer;

outputting the match answer;

determining a match answer category from the match answer;

determining a look-up association based on the match answer category and a search history table;

inputting the look-up association into an alternative answer probability table to identify an alternative answer category;

performing a secondary search at a second random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category; and

outputting the alternative answer.

2.　　The method of claim 1, wherein the match answer category and the alternative answer category form a category answer association, and the search history table comprises previously determined category answer associations.

3.　　The method of claim 2, wherein the alternative answer probability table is determined from the search history table.

4.	The method of claim 1, wherein the search term is extracted from a natural language input.

5.	The method of claim 1, wherein the match answer and alternative answer are presented in a natural language format.

6.	A user preference search system for searching a knowledge base to find a match answer and an alternative answer for a search term, comprising:

a search engine that performs a first search at a first location in the knowledge base and returns a match answer, and performs a second search at a second location in the knowledge base to find an alternative answer, wherein the alternative answer belongs to an alternative answer category determined by inputting a look-up association into an alternative answer probability table, wherein the look-up association is based on a search history table; and

a table update system that updates the alternative answer probability table based on a table of previously determined category answer associations.

7.	The user preference search system of claim 6, wherein the first and second locations are determined randomly.

8.	The user preference search system of claim 6, wherein the look-up association is determined from a search history.

9.   The user preference search system of claim 7, wherein each previously determined category answer association comprises a match answer category and an alternative answer category.

10.   The user preference search system of claim 6, further comprising a natural language parser for receiving natural language commands and generating the search term.

11.   A program product stored on a recordable medium for searching a knowledge base database for and providing a match answer and an alternative answer, comprising:

    means for inputting a search term;

    means for beginning a search at a random location in the knowledge base to identify the match answer;

    means for outputting the match answer;

    means for selecting a match answer category from the match answer;

    means for determining a look-up association based on the match answer category and a search history table;

    means for inputting the look-up association into an alternative answer probability table to identify an alternative answer category;

    means for performing a secondary search at a second random location in the knowledge base to find the alternative answer that only belongs to the alternative answer category; and

    means for outputting the alternative answer.

12.   The program product of claim 11, wherein the match answer category and the alternative

answer category form a category answer association, and the search history table comprises a ~~table of~~ previously determined category answer associations.

13.   The program product of claim 11, wherein the alternative answer probability table is determined from the search history table.

14.   The program product of claim 11, wherein the search term is extracted from a natural language input.

15.   The program product of claim 11, wherein the match answer and alternative answer are presented in a natural language format.

EVIDENCE APPENDIX

No evidence has been submitted.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.